THE EFFECT Of NUMBERED HEADS TOGETHER TO JUNIOR HIGH SCHOOL STUDENTS' NATURAL SCIENCES COMPETENCIES Of SMPN 2 BATANG ANAI BASED THEIR PRELIMINARY KNOWLEDGE

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ABSTRACT

This study aimed to determine the significant effect of Number Heads Together (NHT) Model to students' competency in understanding natural sciences materials. The samples are categorized into two groups which are high preliminary knowledge and low preliminary knowledge. The two groups will compare between class with NHT Models and conventional Models. This research uses pra-experimental design. The Population of the research is Junior High School students of SMPN 2 Batang Anai who registered in 2016/2017 academic years. The students were given pretest and posttest. The Data is analyzed using two ways ANNAVA. Based on data analysis, it can be concluded that there are significant differences between students Who taught with NHT Models and conventional models.

Index Terms— NHT,Competencies,knowledge

INTRODUCTION

Natural Science (IPA) as part of science has an important role in improving the quality of human resources, especially in supporting the development of natural science and technology. This can be seen from the application of physics which is part of the Science in other disciplines and its application on technological developments. Therefore the subjects of physics need to be introduced from the early start, junior high school, up to college. Educational institutions are expected to give birth to young thinkers who have high intellectual. This can be achieved easily if the learning process at school runs properly.

Teachers as motivators and facilitators in learning are expected to create conditions that can stimulate students to be active in learning and the creation of good interaction between students with teachers and between students with each other. Teachers are also expected to provide opportunities for their students to carry out joint activities in learning so that learning is not only centered on the teacher. Students are given the opportunity to develop their creative ideas in solving problems so that students' thinking ability can develop.

In accordance with the minimum graduation standard, the learning process should be able to improve students' thinking ability. With this, students are expected to independently solve complex problems in everyday life. Here, the role of teachers to provide an effective way of learning concepts, so it is expected to improve student learning competence.

All implementations of KTSP and syllabus refer to improving student competence. The point is that, to achieve educational goals teachers should be able to

provide broad learning opportunities to develop their potential. This shows that the core of KTSP is contextual, using multimetode, multimedia, and student centered learning. With non-teacher-oriented learning, students are required to be active and creative in conducting meaningful learning experiences for the purpose of education. This is in line with the opinion of Sanjaya (2006: 14) that educators as managers of education play an important role in creating and optimizing learning with methods and learning approaches that can increase the activity, critical thinking and creativity of learners in a pleasant atmosphere.

There have been many attempts by related parties in the field of education to improve the quality of physics education. In this case, policies such as improvements to the curriculum related system, placement and equity of education personnel, the procurement of research and skills activities, the addition of facilities and infrastructure and the application of new ideas in the effort to improve the quality of education.

However, the realities encountered in the field, with improvements made to the quality of education are still low. And until now physics is still a lesson favored by most students and is considered a difficult lesson, less interesting, laden with concepts and formulas. Lack of interest and motivation of students' learning resulted in the lack of mastery of students on the subject matter given and caused the low competence of student learning.

Another factor is that students do not have initial skills about the material to be learned in the classroom, so students become passive and teachers dominate the learning process, where the teacher presents all the material interspersed with sample questions and then given the exercises. Learning activities like this make students feel not challenged to develop creative learning skills in solving problems related to the material being studied. Students become less interested with lessons given by teachers so that students' understanding of physics becomes not optimal.

Initial ability (entry behavior) is basically the ability or knowledge that must be possessed by students before learning new skills or knowledge. By knowing the students' early skills, teachers can determine where to begin learning. According to Ali (2010: 74), entry behavior is basically a skill and skills that must be possessed first by the student before he learn new skills / skills. With this initial ability is expected students are able to build skills / skills that will be given the teacher later so that the learning process can take place as it should.

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Based on the observation of the author at SMPN 2 Batang Anai, the learning process in the school is only centered on the teacher, so students become spoiled and only accustomed to receive information from the teacher without wanting to dig further information so that students' thinking ability is low and the students have difficulty in digesting the lesson. This can be seen when the students are given a homework, the students are more likely to only create questions that are similar to the examples given by the teacher during the learning process and the difficulties of working on other slightly different issues, whereas students are required to learn ideas, Problems, and able to apply what they have learned. This can be known from the first daily re-results in the cognitive domain that still below the minimum defined criteria (KKM) is set at 75.

From the results of interviews conducted by the author with several students in SMPN 2 Batang Anai, obtained information that the learning is done in the classroom especially physics learning in general is only transferring knowledge from teachers to students regardless of whether the science delivered can be understood students or not. This can be seen when given some questions or tasks most students can not solve. Likewise, monotonous learning and methods, models or approaches used are still not varied where the

teacher explains the concept in front of the class then applied in the sample questions and exercises. Students tend to be more passive and less participate in learning. This is seen from the activities of students who only listen, see and record what the teacher wrote on the blackboard, and students are not given the opportunity to be able to ask, discuss, and express opinions to other students, so that when the learning process takes place students feel No need to have the initial ability.

Seeing the above conditions, one alternative that can be applied to generate student interest in the learning process in SMPN 2 Batang Anai in obtaining maximum learning competence then the teacher should be able to apply cooperative learning model where students are required to discuss, ask questions, think themselves and express opinions To friends. And students are expected to have a certain ability to be developed into a new capability that is the initial ability possessed by students. Initial ability is the ability in a lesson that is owned or controlled by a student who made the starting point to learn the next lesson.

Seeing this problem, it needs to be improved. One of them by using a more maximal learning model. According to Muhammad Nur (2005), one of the learning models that can be used is the learning model Numberered Head Together (NHT). The hallmark of the NHT model is that the teacher simply designates a student who represents his group without informing who will represent the group. So this way guarantees the total involvement of all students. This is an excellent way to increase individual responsibility in group discussions. According to Ibrahim (2011 :), Numberered Head Together (NHT) is a model involving more students in the study covered in a lesson and checking their understanding of the content of the lesson. Through this learning model, the learning atmosphere will be more enjoyable because students learn and exchange ideas with their own friends. In addition to improving students' abilities and liveliness of individual students can also train in cooperation in groups that ultimately spur the competence of physics learning.

Based on the above description, the research conducted is about the Influence of Learning Model Numbered Heads Together By Considering Early Capability of Science Competence of Grade VIII Students of SMPN 2 Batang Anai.

RESEARCH METHODS

This type of research is quasi experimental research (Quasi Experimental Research). The purpose of quasi-experimental research is to obtain information which is approximate for information obtained by actual experiments in circumstances that are not possible to control all variables in full (Suryabrata, 2006: 92).

The independent variable in this research is the model of learning Numbered Heads Together (NHT). And the second independent variable is the student's initial ability. This initial ability is differentiated into high initial ability and low initial ability, while the dependent variable is the student's competence. The research design used factorial design 2 x 2.

DISCUSSION

Physics Learning

Learning is a process of cooperation between teachers and students to take advantage of all potential and existing sources, good potential that exists on students such as: interests, talents and abilities of the ones included learning styles as well as the potential that exists outside the student such as the environment, Facilities and learning resources as an effort to achieve certain learning goals (Sanjaya, 2008: 26). Learning is a combination that consists of human elements, materials, facilities, equipment and procedures that affect each other to achieve goals (Hamalik, 1997: 57). So learning is membelajarkan means all the power and effort how someone makes someone else learn and how to generate learning events in the person.

Physics learning is a learning that requires learners to gain experience in the application of scientific methods through experiments or experiments. Thus, in physics learning new competencies will be achieved if all learners are actively involved both physically and mentally. To understand the physics that have specific learning objectives, which fosters scientific attitude, honest, objective, open, resilient, critical, meticulous and able to cooperate with others, we need a model of learning that match the characteristics of learning physics. Physical learning has its own characteristics compared with other fields of science, as Supriyono (2003: 8)

"Physics science learning process has two dimensions, namely learning science materials and how to do science activities. There are several things in physics science learning, including what students experience, how students learn and what processes experienced by students. In detail can learn about: a. Product capabilities of scientific inquiry (facts, concepts, principles, and theories). B. Nature of scientific effort (method, habit of thinking, approach to problem). C. Values and attitudes (scientific community, local community, wider community and family); Application and risks of physics and technology (social context, personal context); Physics careers (what physicists do, who they are and how they are educated); Themselves (interest in physics, the capacity of physics). "

Thus, in general physics learning focuses on the discovery of information through experience. These experiences include observing, measuring, categorizing, planning experiments, asking questions, solving problems and clarifying comprehension. So students need to be given the opportunity to develop their skills in a meaningful learning environment.

One of the goals of physics learning in junior high in KTSP is to develop curiosity, positive attitude and awareness of the existence of interaction between science, environment, technology and society. Therefore, science lesson (physics) of SMP in general should have introduced to learners ability to do invetigasi (investigation) although its nature still very low.

Cooperative Learning

According to Huda (2010: 27), cooperative learning is believed to be a pedagogical practice to improve the learning process, thinking style, social behavior, as well as concern for students who have different backgrounds. The learning system of mutual cooperation or cooperative learning is a system that provides opportunities for students to work with fellow students in structured tasks.

In the cooperative learning model, there are 5 elements that must be considered namely, the face to interconnect communication between students. Students are given individual responsibility in solving a given problem so as to create positive interdependence between each other. At the end of the activity, there are evaluations or results obtained.

The process of group formation should pay attention to the diversity of group members. Ibrahim (2001: 6) states that the way of grouping students is as follows:

1) Classes are divided into small groups whose members consist of students with high ability, moderate, and low.
2) If possible in the formation of groups also note the differences of ethnic culture, gender, socio-economic background and so on.
3) Students cooperate in groups cooperatively to master their academic materials.
4) The reward system is more group-oriented than the individual.

Group formation is based on students' academic ability ranked. The heterogeneous grouping of students is useful for training students to accept disagreements and work with friends different from themselves. The awards are given to each non-individual group so that there is no social jealousy.

Learning Model Numbered Head Together (NHT)

According to Nur (2005: 23), the model of learning Numbered Head Together (NHT) is basically a variation of group discussion with his trademark is that teachers only appoint a student who represents his group without informing who will represent the group. So this way guarantees the total involvement of all students. This is an excellent way to increase individual responsibility in group discussions.

Numbered Head Together (NHT), first introduced by Spencer Kagen. Numbered Head Together (NHT) is a learning model developed to engage many students in reviewing the material covered in a lesson and measuring their understanding of the subject matter (Ibrahim, 2002: 28). The Numbered Head Together (NHT) model provides students with opportunities to share ideas and consider the most appropriate answers. In addition, this model also encourages students to improve their cooperation spirit. This model requires that students work interdependently on small groups cooperatively. The structure was developed as an alternative material from traditional class structures such as holding hands first to then be appointed by the teacher to answer the questions that have been asked. This kind of atmosphere creates an uproar in the classroom, as students sometimes fight for each other to get a chance to answer a question or no one wants to answer questions even in shame. According to Huda (2011: 138), the steps of learning model Numbered Head Together (NHT) are:

a) Students are divided into groups, each student in each group gets a number.
b) The teacher gives the task and each group does it.
c) The group discusses the correct answer and ensures each group member can work on it / find out the answer.
d) The teacher calls one of the student numbers with the number called to report the results of their cooperation.
e) Feedback from another friend, then the teacher dials another number

Thus, the model of learning Numbered Heads Together (NHT) is a learning model developed to engage many students in reviewing the material covered in a lesson and measuring their understanding of the subject matter. Numbered Heads Together (NHT) learning model is expected to make students discuss, ask questions, think for themselves and express opinions to friends, students are more active, enthusiastic and students do not make the teacher as the only source of information, so that all will lead to the achievement Learning objectives, both in terms of process and target achievement mastery of basic competencies.

INITIALABILITY

Initial ability is the ability that each student has about the basic material as a prerequisite in learning new material. Initial capability is also called as a cognitive structure stored in long-term memory as the foundation of data. Given the early ability of the teacher to determine where the lesson should begin this level of ability is called entry behavior.

The initial ability between each student has a difference, this is because each student has a different level of intelligence. Mulyadi (2004), explained that the students' early ability had an influence on learning outcomes. Students have the opportunity to reach kempetensi maximally in accordance with the level of ability possessed. The student's early ability before the start of learning has much to do with the learning outcomes to be achieved. By knowing the teacher's early ability to determine where to start learning. In this regard, Paul (1997: 33) says that in one's mind there is an initial skill

structure (schemata). Each scheme acts as a filter and facilitator for new ideas and experiences. Schemes organize, coordinate, and intensify basic principles through contact with new experiences, schemes can be developed and changed, ie by assimilation process. If the new experience still conforms to a person's own scheme, then the scheme is only developed through the process of assimilation. If the new experience is so different from the existing scheme, so the natural scheme is no longer suitable for the experience, the old scheme is changed until there is a balance again.

With this early ability, students are able to build the skills / skills that will be given by the teacher later on. Next according to Ali (2010: 77), how to recognize the entry behavior, among others:

1. By interview or test. The teacher's pre-test can be a tool for recognizing entry behaviors. The pre-test should be the same as that used in the post-test.
2. Through instructional analysis. From the instructional analysis made can be known level of ability or mastery of materials.

The learning process will be more effective if the learners have the initial ability about the material to be studied, it means that the level of initial ability possessed by students influences the activity and creativity of learning, and the application of certain learning methods can support the success of students generated by the initial ability.

Based on the above description, it can be concluded that the student's early ability is the ability possessed by each student about the basic material as a prerequisite before learning new material. The learning process will be more effective if the students have the initial ability about the material to be learned so that the competence of student learning will be better again.

Competence of Physics Learning

Competence is a combination of abilities, skills, values and attitudes reflected in thinking and acting habits. The habit of thinking and acting consistently and continuously enables a person to be competent, in the sense of having the ability, skills and basic values to do something. According to Puskur (2002), competence is the ability, skill, and basic values reflected in the habit of thinking and acting. The habit of thinking and acting consistently and continuously enables a person to be competent in the sense of having the ability, skills and basic values to do something. So, after the learning process takes place students are expected to have good competence so as to develop the skills that he has for his future. Tampa's abilities and attitudes will not arise certain competencies.

Competencies that must be mastered by the students need to be considered in such a way as to be judged as a result of learning that refers to the direct ability. Students need to know the learning objectives and levels of mastery that are used as the criteria of achievement in an inscriptive manner, developed based on predetermined goals and have contributed to the competencies being studied.

Competence is not only present in the level of ability, but the competence must be described in the pattern of behavior. Someone is said to have competence of course if he not only knows about something, but how the implications and implementation of that ability in the pattern of behavior that he did. Competence is essentially a blend of abilities, skills, values and attitudes that are reflected into the habit of thinking and acting.

When analyzed further, this competency consists of several aspects. Gullo (2002: 56), analyzes competence into three aspects, each of which has different levels, namely:
1. Cognitive competence, which includes

ability, understanding, application, analysis, evaluation and creation.

2. Affective competence, which includes recognition, response, appreciation of value, organizing, and practice.
3. Psychomotor competence, which deals with skills learning outcomes and ability to act.

The three domains are not separate and are three aspects of human behavior. The following will be presented operational words that can be used for indicators on competencies both concerning cognitive, affective and psychomotor.

In this study, the competence is the competence by modifying the opinions of Gulo and Mulyasa ie cognitive domain, including ability, understanding, application, analysis, evaluation and creation. To affective by including acceptance, responding, appreciating and organizing. Where these four competencies consist of several indicators, while for the psychomotor domain includes, preparation, implementation, reporting of results that also consists of several indicators.

CONCLUSIONS AND RECOMMENDATIONS

This research is a study that see the Influence of Learning Model Numbered Heads Together by Considering Early Capability of Science Competence of Grade VIII Students of SMPN 2 Batang Anai.

In accordance with the results of hypothesis testing and discussion of research, it can be concluded that there is influence Influence Learning Model Numbered Heads Together By Considering Early Capability of Science Competence Students Class VIII SMPN 2 Batang Anai, good for cognitive, psychomotor and affective aspects; There is no interaction between the use of learning models and students 'early ability to influence students' physics competencies, both for cognitive, psychomotor and affective aspects.

For supervisors, in order to provide school-school inputs to use the Numbered Heads Together (NHT) learning model in the learning process; For school principals and curriculum representatives, in order to foster teachers' critical thinking and professionalism skills, by providing support for teachers to use the Numbered Heads Together (NHT) model of learning; For the MGMP, to make the model of learning Numbered Heads Together (NHT) as one of the good learning alternatives to improve student competence; For teachers, who want to apply the model of learning Numbered Heads Together (NHT) to better understand the characteristics for each student especially for low-ability students early, so this learning model effectively improve students' learning competence as a whole; For other researchers, the results of this study can make a grounding in order to follow up research with a wider scope.

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